Title (en)

METHOD FOR MANUFACTURING A QUENCHED AND TEMPERED SEAMLESS PIPE FOR A HIGH-STRENGTH HOLLOW SPRING

Title (de)

VERFAHREN ZUR HERSTELLUNG VON VERGÜTETEN NAHTLOSEN ROHREN FÜR EINE HOCHFESTE HOHLFEDER

Title (fr)

PROCÉDÉ DE FABRICATION D'UN TUBE SANS SOUDURE TREMPE ET REVENU POUR RESSORT CREUX HAUTE RÉSISTANCE

Publication

EP 3214189 A1 20170906 (EN)

Application

EP 15855119 A 20151026

Priority

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- JP 2015080126 W 20151026

Abstract (en)

To provide a method for manufacturing steel for a high-strength hollow spring that exhibits excellent resistance to hydrogen embrittlement. Disclosed is a method for manufacturing steel for a hollow spring obtained by quenching and tempering a seamless pipe for use as a material of the hollow spring, wherein the seamless pipe including predetermined components is subjected to a heat treatment is performed to satisfy quenching conditions (1) mentioned below, and to satisfy tempering conditions (2) mentioned below, (1) quenching conditions: 26 , 000 #¤ T 1 + 273 × log t 1 + 20 #¤ 29 , 000 900 °C #¤ T 1 #¤ 1 , 050 °C , 10 seconds #¤ t 1 #¤ 1 , 800 seconds , where T1 is a quenching temperature (°C), and t1 is a holding time (seconds) in a temperature range of 900°C or higher, and (2) tempering conditions: 13 , 000 #¤ T 2 + 273 × log t 2 + 20 #¤ 15 , 500 T 2 #¤ 550 °C , and t 2 #¤ 3 , 600 seconds , where T2 is a tempering temperature (°C), and t2 is a total time (seconds) from start of heating to completion of cooling.

IPC 8 full level

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